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SEASONAL PROGRESS REPORT NO. 3
for the period
September, October and November 1976

to

ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

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for the period
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ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 Lincoln St., Suite 900
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by

Aeromet, Inc.
P.O. Box FF
Norman, OK 73070

1.0 INTRODUCTION

Low level temperature and wind data were collected for the fall season of September, October and November 1976 at Casper, Wyoming; the Colorado C-b Tract 25 miles west of Rio Blanco, Colorado; Craig, Colorado; Escalante and Hanksville, Utah; Rock Springs, Wyoming; and the U-a/U-b Tract 5 miles south of Bonanza, Utah. The collection of data at the U-a/U-b site commenced October 1, 1976 and will continue through 30 September, 1977. The data were collected using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were made ½ hour after sunrise and at 1400L.

The pilot balloon had an ascent rate of 500 ft/min and it was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 24 ft. AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The Annual Progress Report is divided into seven parts, one corresponding to each of the seven field sites. The temperature and wind data were not edited after the completion of the Monthly Progress Reports.

2.0 DATA SUMMARY

2.1 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data cannot be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height a variety of "heat island" effects should be viewed. The rigourous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for this analysis 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

A summary of the average mixing layer heights calculated with the 0°, +5° and +10° "heat island" effects for each of the six field sites for the fall season of September, October and November are included in the report. The percent of occurrence of the average height within 250m increments above ground level is given in tabular form. The total number of soundings included in the sample populations are listed in the table.

2.2 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

The temperature data are processed to produce for each site a seasonal summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classificaiton scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States" paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974, Santa Barbara, California.)

The temperature and wind data are processed together to produce for each site a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the ΔT/100m criterion is met but the wind speed criterion is not met, then the wind data are checked against the criterion

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED (m s^{-1})
A	<-1.9	≤2
B	-1.9 - -1.7	≤5
C	-1.7 - -1.5	≤6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤5
F	>1.5	≤3

for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the ΔT/100m value is 1.7 and the wind speed is 7 m s^{-1}, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m s^{-1} maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100m and a wind speed value of 7 m s^{-1} are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce. A detailed description of the punched output can be found in the Monthly Progress Reports.

AVERAGE MIXING LAYER HEIGHT

Colorado C-b Tract

Season: September, October, November

MIXING LAYER HEIGHT (Height in meters)	PERCENT OF OCCURRENCE					
	MORNING			AFTERNOON		
	0°	+5°	+10°	0°	+5°	+10°
surface	59.3			34.8		
1 - 250m	29.6	3.7		21.7		
251 - 500m	7.4	18.5		4.3	4.3	
501 - 750m	3.7	18.5	3.7	13.0	4.3	
751 - 1000m		22.2	7.4	8.7	8.7	
1001 - 1250m		14.8	3.7		4.3	4.3
1251 - 1500m		7.4	11.1	4.3	17.4	
1501 - 1750m		3.7	14.8	13.0	8.7	8.7
1751 - 2000m			11.1		13.0	4.3
> 2000m		3.7	29.6		34.8	47.8
None defined		7.4	18.5		4.3	34.8
TOTAL NUMBER	27	27	27	23	23	23

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2009

DATE 09/01/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
58.	76.	0.24	-0.24

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2011

DATE 09/01/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
634.	672.	0.0	-0.73

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1941

DATE 09/03/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
459.	574.	0.08	-0.78

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1227

DATE 09/03/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 0M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.63
100.	250.	-0.87
250.	500.	-0.63
500.	750.	-0.59
750.	1000.	-0.71
1000.	1500.	-0.74

COL CB TRACT ELEV 2042 METERS SOUNDING ID 992

DATE 09/07/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
229.	267.	0.0	-0.48

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 09/07/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.0	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2279

DATE 09/09/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	207.	0.28	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2368

DATE 09/09/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	4.72	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2331

DATE 09/15/76 TIME 06:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	76.	0.0	-0.24

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2523

DATE 09/15/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
218.	256.	0.0	-1.49

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2567

DATE 09/17/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.20
100.	250.	-0.51
250.	500.	-0.93
500.	750.	-0.94
750.	1000.	-0.98
1000.	1500.	-0.94

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2406

DATE 09/17/76 TIME 14:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
305.	457.	0.0	-0.68

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 09/21/76 TIME 06:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	419.	0.59	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 09/21/76 TIME 12:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
191.	229.	0.0	-0.61

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2123

DATE 09/23/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.0	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2061

DATE 09/23/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
991.	1029.	0.0	-0.52

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2179

DATE 09/25/76 TIME 07:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	648.	0.03	-0.50

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2237

DATE 09/25/76 TIME 12:37MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	495.	0.12	-0.41

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2058

DATE 09/27/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	152.	0.0	-0.38

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1965

DATE 09/27/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	114.	0.0	-0.37

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1958

DATE 09/29/76 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.0	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1947

DATE 09/29/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
787.	825.	0.0	-1.00

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1981

DATE 10/26/76 TIME 08:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	381.	0.0	-0.76

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1564

DATE 10/26/76 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1418.	1457.	0.0	-0.96

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1909

DATE 10/28/76 TIME 12:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
449.	640.	1.26	-1.04

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1881

DATE 10/30/76 TIME 08:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
294.	332.	0.0	-1.04

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3157

DATE 11/01/76 TIME 08:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	0.56	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3158

DATE 11/04/76 TIME 06:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	305.	0.28	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3155

DATE 11/05/76 TIME 08:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	114.	1.82	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3152

DATE 11/08/76 TIME 08:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.24	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3154

DATE 11/08/76 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	114.	0.0	-0.84

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3153

DATE 11/10/76 TIME 07:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	152.	0.09	-0.50

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3160

DATE 11/10/76 TIME 14:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.0	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3149

DATE 11/12/76 TIME 08:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	762.	0.98	-1.55

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3147

DATE 11/12/76 TIME 15:50MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.50	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3148

DATE 11/15/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	191.	0.25	-0.76

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3152

DATE 11/15/76 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	38.	0.0	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3150

DATE 11/16/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	114.	0.0	-0.26

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3145

DATE 11/16/76 TIME 14:50MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-4.12
100.	250.	-0.74
250.	500.	-0.88
500.	750.	-0.98
750.	1000.	-0.98
1000.	1500.	-1.01

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3146

DATE 11/18/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	267.	1.06	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3143

DATE 11/18/76 TIME 12:40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
174.	220.	0.19	-1.37

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3142

DATE 11/19/76 TIME 07:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	229.	0.87	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3142

DATE 11/19/76 TIME 12:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
846.	884.	0.0	-1.09

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3144

DATE 11/22/76 TIME 07:20MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	267.	0.46	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3140

DATE 11/22/76 TIME 13:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	152.	0.50	-1.07

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3136

DATE 11/24/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	229.	0.21	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3138

DATE 11/24/76 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.96
100.	250.	-0.81
250.	500.	-1.00
500.	750.	-1.03
750.	1000.	-0.96
1000.	1500.	-1.00

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 3137

DATE 11/29/76 TIME 08:25MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
333.	485.	0.26	-0.98

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2867

DATE 11/29/76 TIME 14:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
952.	1026.	0.13	-1.05

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2865

DATE 11/30/76 TIME 08:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	201.	0.15	-2.78

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2863

DATE 11/30/76 TIME 13:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
932.	1008.	1.02	-1.03

MONTH: S U N YEAR: 1970. CUL CB TRACT ELEV 2042 METERS

HOLZWORTHIS CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

		INVERSION BASE HEIGHT (M)									
THICKNESS (METERS)	SFC	1- 100	101- 250	251- 500	501- 750	751- 1000	1000- 1500	1501- 2000	2001- 2500	2501- 3000	TOTAL
1 - 100	8	6	5	1	1	5	1	0	0	0	27
101 - 250	4	3	0	4	0	0	0	0	0	0	11
251 - 500	5	1	1	0	0	0	0	0	0	0	7
501 - 750	0	2	0	0	0	0	0	0	0	0	2
751 - 1000	0	0	0	0	0	0	0	0	0	0	0
1001 - 1500	0	0	0	0	0	0	0	0	0	0	0
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	17	12	6	5	1	5	1	0	0	0	47
DT/DZ 5		5	0	0	0	0	0	0	0	0	5
FROM INV 4		4	3	2	1	1	0	0	0	0	11
BASE 3		1	1	3	0	4	1	0	0	0	10
TO 2		1	2	0	0	0	0	0	0	0	3
SFC 1		1	0	0	0	0	0	0	0	0	1
NO INV TOT		4	4	4	4	4	4	DT/DZ (DEG C)/100M			
DT/DZ FOR 5		0	0	0	0	0	0	5= 0.00 TO -0.40			
SAME 4		1	2	1	1	1	1	4=-0.41 TO -0.80			
LAYERS 3		1	2	3	3	3	3	3=-0.81 TO -1.20			
AS INV 2		0	0	0	0	0	0	2=-1.21 TO -1.60			
BASE 1		2	0	0	0	0	0	1=<-1.60			

MONTH: S O N YEAR: 1970. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S U N YEAR: 1976. COL CR TRACT SEC 10 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	1.00	0.0	0.0	0.0	0.0	4.6	1.00
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	4.6	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	1.00	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.02

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S O N YEAR: 1970, CUL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S U N YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.04	0.0	0.0	0.0	0.0	0.0	2.9	0.04
NE	0.0	0.0	0.04	0.0	0.0	0.0	8.5	0.04
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.04	0.0	0.0	0.0	0.0	4.6	0.04
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.04	0.0	0.04	0.0	0.0	0.0	5.4	0.08
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.12	0.12	0.0	0.0	0.0	0.0	3.4	0.25
SW	0.04	0.0	0.0	0.0	0.0	0.0	0.8	0.04
WSW	0.0	0.0	0.04	0.0	0.0	0.0	8.5	0.04
W	0.04	0.0	0.0	0.0	0.0	0.0	2.4	0.04
WNW	0.04	0.08	0.04	0.0	0.0	0.0	4.3	0.15
NW	0.0	0.04	0.0	0.0	0.0	0.0	4.4	0.04
NNW	0.08	0.12	0.0	0.04	0.04	0.0	6.7	0.27
AVG SPEED	1.9	4.2	8.2	15.7	17.3	0.0		0.0
TOTAL	0.38	0.38	0.15	0.04	0.04	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE D STABILITY CLASS IS 0.63

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S U N YEAR: 1970. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.21	0.07	0.0	0.0	0.0	0.0	1.6	0.29
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.07	0.0	0.0	0.0	0.0	0.0	1.6	0.07
E	0.07	0.0	0.0	0.0	0.0	0.0	2.0	0.07
ESE	0.0	0.07	0.0	0.0	0.0	0.0	4.1	0.07
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.14	0.0	0.0	0.0	0.0	0.0	2.3	0.14
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.07	0.07	0.0	0.0	0.0	0.0	2.3	0.14
SW	0.07	0.0	0.0	0.0	0.0	0.0	0.1	0.07
WSW	0.07	0.0	0.0	0.0	0.0	0.0	1.0	0.07
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.07	0.0	0.0	0.0	0.0	0.0	0.3	0.07
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	1.3	3.7	0.0	0.0	0.0	0.0		0.0
TOTAL	0.79	0.21	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE E STABILITY CLASS IS 0.34

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S O M YEAR: 197o. COL CO TRACT SEC IO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE F STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: S U N YEAR: 1970, COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.10	0.02	0.0	0.0	0.0	0.0	1.9	0.12
NE	0.0	0.0	0.02	0.0	0.0	0.0	6.5	0.02
ENE	0.02	0.0	0.0	0.0	0.0	0.0	1.6	0.02
E	0.02	0.0	0.0	0.0	0.0	0.0	2.0	0.02
ESE	0.0	0.05	0.0	0.0	0.0	0.0	4.4	0.05
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.07	0.02	0.02	0.0	0.0	0.0	4.0	0.12
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.10	0.10	0.0	0.0	0.0	0.0	3.1	0.20
SW	0.05	0.0	0.0	0.0	0.0	0.0	0.4	0.05
WSW	0.02	0.0	0.02	0.0	0.0	0.0	4.9	0.05
W	0.02	0.0	0.0	0.0	0.0	0.0	2.4	0.02
WNW	0.05	0.05	0.02	0.0	0.0	0.0	3.5	0.12
NW	0.0	0.02	0.0	0.0	0.0	0.0	4.4	0.02
NNW	0.05	0.07	0.0	0.02	0.02	0.0	6.7	0.17
AVG SPEED	1.6	4.1	8.2	13.7	17.3	0.0		0.0
TOTAL	0.51	0.34	0.10	0.02	0.02	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION INDEPENDENT OF STABILITY

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 10 SOUNDINGS FROM A SAMPLE OF 51 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

Form 1279–3
(June 1984)

BORROWER'

TN 859 .U82 W448

Seasonal progres
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